



LOGISTICS INNOVATION AND ORGANISATIONAL COMPETITIVENESS OF MARITIME COMPANIES IN SOUTH-WEST NIGERIA

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ABSTRACT: *This study examined logistics innovation and organisational competitiveness of maritime companies in South-West Nigeria. The study applied the positivist research philosophy and correlational research design. The population of this study comprised 51 registered maritime companies in South-West Nigeria. A sample size of 21 maritime companies was selected using a purposive sampling technique. The sampling units were made up of managers of the selected maritime companies in South-West Nigeria. Data were collected from the respondents using a structured questionnaire. The data collected were analysed statistically while the Spearman Rank Order Correlation Coefficient (ρ) was used to test the formulated hypotheses. The findings revealed that transportation innovation has a significant relationship with customer satisfaction and customer patronage of maritime companies. The study equally revealed that warehousing innovation has a significant relationship with customer satisfaction and customer patronage of maritime companies. Based on these findings, it was concluded that logistics innovation such as transportation innovation and warehousing innovation are significant predictors of organisational competitiveness in the maritime sector in South-West Nigeria. Based on the findings and conclusion, it was recommended that maritime companies in Nigeria should adopt logistics innovation strategies as it would improve their competitiveness in the dynamic and fast-changing environment.*

KEYWORDS: Logistics innovation, transportation innovation, warehousing innovation, organisational competitiveness, customer satisfaction and customer patronage.



INTRODUCTION

In any industry where there are numerous companies providing similar services, there is always a strong desire among the competing firms to improve their organisational competitiveness. The maritime industry in Nigeria is one of the industries with a large number of companies. All these companies in this industry are competing for a place in the minds of their target customers as they intensify their efforts to deliver better value to their customers. The ability of a firm to deliver something that is more valuable than what its competitors offer indicates that the company is competing favourably in the industry (Kiama & Kagiri, 2016). Verter and Osakwe (2015) noted that a firm has a better chance of survival in its industry if it continuously improves its organisational competitiveness. Improving organisational competitiveness is a guarantee for business growth and survival. Tarus et al (2017) argued that a firm that is unable to compete favourably in its industry will not last long in the business. For this reason, maritime companies in Nigeria need to their efforts to improve their organisational competitiveness so as to survive in the industry. In order for maritime companies to improve their organisational competitiveness, they need to embrace logistics innovation.

Logistics innovation refers to new ideas, new services, new processes and new technology which are applied to improve the logistics operations of a firm (Grawe, 2009). Oksana and Yevhen (2019) defined logistics innovation as the process of reconfiguring the entire logistics operations such as transportation, warehousing, packaging, etc. to adapt to new and changing trends in the logistics industry and improve the logistics performance of a firm. Logistics innovation requires companies to modify their services, processes and technology to achieve operational efficiency. The idea behind logistics innovation is to improve logistics service delivery by adding value to customers (Suvittawat, 2020). Oksana and Yevhen (2019) opined that logistics companies need to adopt new technologies and innovation in order to add value to their customers, reduce logistics costs and deliver products in a safe and timely manner.

Logistics innovation has the capability of improving organisational competitiveness. According to Cui et al (2012), logistics innovation enables logistics firms to keep pace with the changes that have taken place in the logistics industry and improve their competitiveness. Asian (2019) stated that logistics innovation helps firms to strengthen their relationship with their customers, increase customer loyalty and improve their competitiveness. Sipos and Bizoi (2015) stated that innovative logistics services help to position the company for better service delivery and greatness. Wang et al (2020) argued that logistics innovation provides an opportunity for logistic firms to deliver products in a timely and cost-effective manner, thereby increasing customer satisfaction, building a strong relationship with customers and improving their competitiveness. It is against this backdrop that this study examines the relationship between logistics innovation and the organisational competitiveness of maritime companies in South-West Nigeria.

Statement of the Problem

Improving organisational competitiveness has become a challenging task for many companies in the logistics industry in Nigeria. Some companies are faced with the problem of high costs and delays in delivering goods to their customers, thereby resulting in customer dissatisfaction and low customer patronage. Many maritime companies have ceased operations due to their inability to compete favourably in the industry (Gikonyo et al, 2022). The inability of these companies to compete favourably in the industry could be attributed to their inability to



implement logistics innovations. A lot of innovations have taken place in the logistics industry. These innovations revolve around basic logistics services such as transportation systems, warehousing operations, packaging and freight forwarding (Singhry et al, 2014; Sipos & Bizoi, 2015; Witell et al, 2016; Hsieh & Chou, 2018). Some logistics scholars (e.g. Hsieh & Chou, 2018; Wang et al, 2020; Gikonyo et al, 2022) have called on marine companies to embrace the innovations that have taken place in the logistics industry. While a good number of marine companies have responded positively to this call by embracing logistics innovations, evidence of how these innovations have impacted firm competitiveness in the Nigerian maritime industry is yet to be ascertained. This has created a gap in literature which this study intends to fill and contribute to the existing literature on logistics management in modern society.

CONCEPTUAL FRAMEWORK

The conceptual framework of logistics innovation and organisational competitiveness is shown in Figure 1 below:

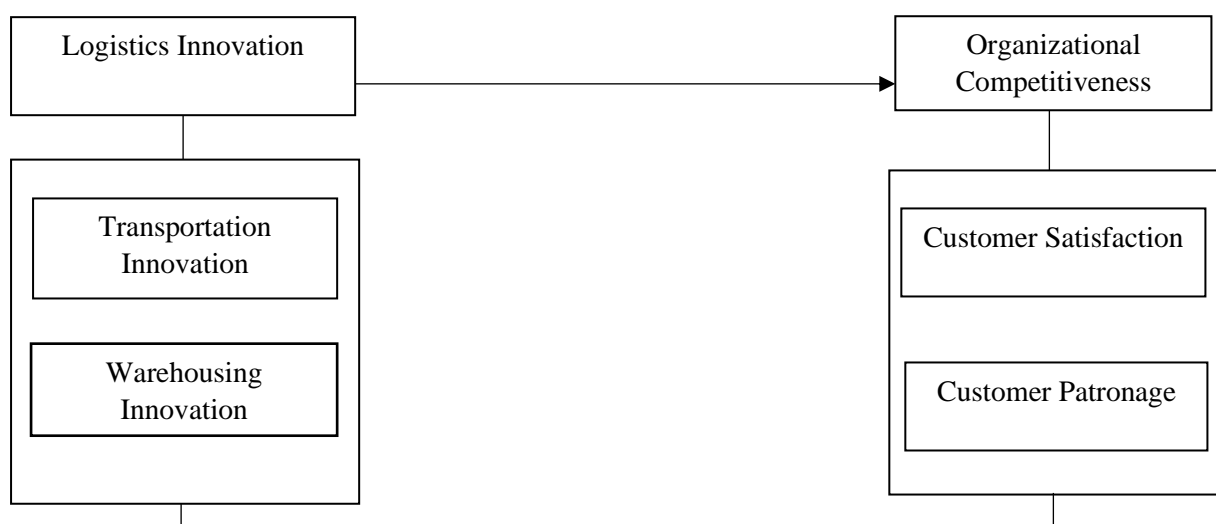


Fig 1: Conceptual framework of logistics innovation and organisational competitiveness of maritime companies

Aim and Objectives of the Study

The aim of this study is to explore the relationship between logistics innovation and organisational competitiveness of maritime companies in South-West Nigeria. The objectives of the study are to:

1. determine the relationship between transportation innovation and customer satisfaction of maritime companies in South-West Nigeria;
2. ascertain the relationship between transportation innovation and customer patronage of maritime companies in South-West Nigeria;
3. find out the relationship between warehousing innovation and customer satisfaction of maritime companies in South-West Nigeria;



4. explore the relationship between warehousing innovation and customer patronage of maritime companies in South-West Nigeria.

Research Questions

Attempts were made to answer the following research questions:

1. What is the relationship between transportation innovation and customer satisfaction of maritime companies in South-West Nigeria?
2. How does cost transportation innovation relate to customer patronage of maritime companies in South-West Nigeria?
3. To what extent does warehousing innovation relate to customer satisfaction of maritime companies in South-West Nigeria?
4. What is the relationship between warehousing innovation and customer patronage of maritime companies in South-West Nigeria?

Research Hypotheses

The following hypotheses were formulated in this study:

Ho₁: There is no significant relationship between transportation innovation and customer satisfaction of maritime companies in South-West Nigeria.

Ho₂: There is no significant relationship between cost transportation innovation and customer patronage of maritime companies in South-West Nigeria.

Ho₃: There is no significant relationship between warehousing innovation and customer satisfaction of maritime companies in South-West Nigeria.

Ho₄: There is no significant relationship between warehousing innovation and customer patronage of maritime companies in South-West Nigeria.

REVIEW OF RELATED LITERATURE

Concept of Logistics Innovation

Innovation simply means to produce something new or in different manner (Schumpeter, in Sipos & Bizoi, 2015). However, innovation that takes place in the logistics industry is known as logistics innovation (Sipos & Bizoi, 2015). Flint et al (2005) defined logistics innovation as any logistics related service from basic to the complex that is seen as new and helpful to a particular focus audience. The audience according to Flint et al (2005) could be internal where innovations improve operational efficiency or external where innovations serve customers better. Grawe (2009) described logistics innovation as the new technology, new services, new processes and new ideas which are used to improve the logistics operations of a firm. Innovation is gaining more importance in the logistic industry. The rapid changes in the business environment have challenged logistics firms to embrace innovation to keep pace with the developments in the industry and sustain their competitive advantage (Lee, 2006; Asian,



2019). Nagarajan and White (2007) noted that many logistics firms are inspired by new technology to look out for new logistics solutions that will help them meet today's business challenges in the competitive landscape. Grawe (2009) believed that environmental factors (competition, capital scarcity and labour) and organisational factors (financial resources, knowledge, technology, management resources, and relationship network factors) are the key drivers of logistics innovation.

Dimensions of Logistics Innovation

Logistics innovation takes different dimensions. However, the dimensions of logistics innovation considered in this study are transportation innovation and warehousing innovation.

Transportation Innovation

Transportation is one of the key functions in logistics operations. Transportation is defined as the movement of people and goods from one place to another (Erdogan & Miller-Hooks, 2012). However, transportation has undergone a series of innovations in the logistics industry. Innovative transportation vehicles such as electric vehicles, fuel-efficient vehicles, bio-fuel vehicles and double decks are helping logistics companies to make their logistics operations greener and more efficient as they reduce carbon emissions from transportation activities (Jahre & Fabbe-Costes, 2015). Some logistics firms have embraced a new transportation system by using a hybrid electric vehicle to transport their goods. According to Beers (2014), a hybrid electric vehicle uses both an electric engine and a conventional internal combustion engine. This type of vehicle is eco-friendly and produces a better performance compared to conventional vehicles in terms of reducing costs and carbon emissions. Natural Gas Vehicle (NGV) is another alternative and innovative vehicle used in the logistics industry. This vehicle uses compressed natural gas or liquefied natural gas engines (Gikonyo et al, 2022). The introduction of an automatic check-in system by Eurotunnel is another significant innovation in the logistics industry. This system helps companies to reduce their average transaction time to just 45 seconds for each truck (Mena et al, 2007).

Warehousing Innovation

A warehouse is a commercial building constructed by a company to store goods until when they are needed (Gadde & Hulthen, 2010). A warehouse is used by manufacturers, wholesalers, exporters, importers, customs and transport businesses. Generally, a warehouse can be used to store goods, move goods from one location to another and keep track of information concerning goods that have come into the warehouse (Zacharias & Boopathy, 2022). However, warehousing operations have undergone a series of innovations. Warehousing innovation is the process of creating new or improved warehousing services through the use of modern technologies (Goldsby & Zinn, 2016). Some of the latest innovative warehouse technologies include collaborative mobile robots, electronic data interchange (EDI), warehouse management systems (WMS), radio frequency identification (RFID), drones, blockchain applications, wearable technology, digital twin technology, and sustainable warehousing (Cui et al, 2012; Blecker, et al, 2014). Nagarajan and White (2017) argued that warehousing innovation is highly necessary in a fast-changing and competitive environment. Fugate et al (2010) posited that an innovative warehousing system can easily handle order spikes, make operations more efficient and cost-effective and provide greater flexibility for future evolution. With an innovative warehouses, companies can maximise resource usage, efficiently utilise space, and reduce labour costs (Stank et al, 2017). Warehouse innovation such as the use of



wearable technology can ensure the safety of workers which will lead to employee satisfaction and higher productivity (Chapman et al, 2013).

Concept of Organisational Competitiveness

Organisational competitiveness is the ability of a firm to deliver better value to consumers than its competitors (Somuyiwa & Mcilt, 2012). It requires a firm to continuously improve its products and services to deliver superior value to customers (Tarus et al, 2017). Li and Wang (2019) defined organisational competitiveness as the ability of a firm to provide superior value to customers in order to gain a relative advantage. If a firm is able to deliver better value to customers than its competitors, the firm can be said to have improved its competitiveness. Improving organisational competitiveness comes with a lot of benefits. Some of the benefits which a firm stands to gain from improving its competitiveness include: increased customer patronage, repeat patronage, customer loyalty and retention, sales growth, market share growth and increased profitability (Chen et al, 2017). Abimbola (2010) stated that a firm that is able to continuously improve its competitiveness will grow and survive in its industry. Considering the benefits associated with organisational competitiveness, firms develop strategies to improve their competitiveness to ensure that they remain relevant and survive in their respective industries.

Measures of Organisational Competitiveness

There are several metrics used to measure organisational competitiveness in literature. However, in this study, organisational competitiveness is measured using customer satisfaction and customer patronage.

Customer Satisfaction

Customer satisfaction is the degree to which a product or service meets or surpasses customers' expectations and gives them (customers) a pleasant and memorable experience (Abdul et al, 2014). Christensen (2016) defined customer satisfaction as a measure of expectations being exceeded, met, or not met. Customer satisfaction determines the survival of an organisation and failure to satisfy customers could ruin a business dream (Hapsari et al, 2015). Every organisation wants to satisfy their customers since it is the only way to retain them and maximise profit. Daisy (2014) posited that customer satisfaction holds the potential for increasing an organisation's customer base and reputation. It is the only way to retain customers and attract new ones to the firm. Ackah and Agboyi (2015) argued a company that satisfies its customers stands the chance of sustaining its customer base, attracting new customers to the firm and improving its market competitiveness. For this reason, firms are determined to satisfy their customers since it is the only way to retain them, attract new customers to the firm and improve their organisational competitiveness.

Customer Patronage

Customer patronage refers to the behaviour whereby a customer purchases the product or services of a particular company despite the presence of other competing firms (Rahman et al, 2014). Simons (2016) defined customer patronage as a behavioural action by a customer to buy the product or service of a company despite the fact that there are other companies offering similar products and services. Customer patronage is the desire of every firm irrespective of the sector it belongs. It is the key driver for increased profitability and business growth. It is



impossible for a firm to compete favourably in its industry without increasing customer patronage (Ding et al, 2015). Increasing customer patronage is the only way for firms to grow and survive in the midst of competition. Considering the fact that firms face a competitive challenge in customer acquisition, it becomes imperative for the competing firms to find a way to increase their level of customer patronage. Olalekan (2011) posited that increasing customer patronage is a sure way of improving organisational competitiveness. The benefits associated with increased customer patronage have motivated firms to put in more effort to increase their level of customer patronage.

Theoretical Review

This study applied the innovation diffusion theory which was developed by Rogers in 1962. The theory explains how an idea, product or service gains momentum and diffuses (spreads) through a given population or society (Rogers, 2003). This theory shows how innovation spreads through a specific population. It also explains why and at what rate new ideas, products, services and technology are spread. Rogers described innovation diffusion as the process by which an innovative product or service is communicated over time to a given population in a social system. According to Rogers, five crucial factors influence the spread of a new idea, product or service. They are the innovation itself, adaptors, communication channels, time and a social system. The innovation needs to be adopted widely in order to sustain itself. Within the adoption rate, there is a point where the innovation reaches its peak. This point lies at the axis between the early adopters and the early majority. Between the niche appeal and the mass adoption lies the tipping point which is also known as “the chasm” (Moore et al., 2009). The diffusion of innovation theory is relevant in explaining how logistics innovation spreads among logistics service providers. This theory explains that new methods of delivering logistics services have gained momentum among logistics service providers. Diffusion of innovation theory shows how, why and at what rate logistics services, processes and technology spread among logistics service providers.

Empirical Review

Some related empirical studies have been conducted on the logistics innovation strategies of firms in developing and developed countries. For instance, Gikonyo et al. (2022) examined the influence of logistics innovation on the performance of building and construction manufacturing firms in Kenya. The researchers adopted the descriptive survey research design and used a structured questionnaire to collect data from 270 managers who were selected purposively from the logistics, production, quality control, procurement, transportation and administrative departments of 54 manufacturing companies in Kenya. The data collected from the respondents were analysed using descriptive statistics such as mean and standard deviation and inferential statistics such as ANOVA and regression analysis. The findings revealed that logistics innovation (fuel-saving strategies, hybrid/bio-fuel vehicles and solar technology) has a significant effect on the performance (lead time, quality and customer satisfaction) of building and construction manufacturing firms in Kenya.

Wang et al (2020) explored the impact of logistics innovation capability on the supply chain risks in the industry 4.0 era. Their study employed the survey research design where data were collected from managers (general managers, branch managers, operation managers, sales managers and customer service managers) of courier firms in Australia. The data collected were analysed using Structural Equation Modeling (SEM) and the Partial Least Square



(SmartPLS) version 2.0.M3 statistical software package. The findings showed a negative relationship between logistics innovation capability and supply chain risks (company-side risk, customer-side risk and environmental-side risk) of Australian courier firms. According to the authors, the finding implies that firms can mitigate the negative impacts of supply chain risks by developing logistics innovation capabilities.

Suvittawat (2020) carried out a study to determine the importance of logistics service innovation for business growth. The researcher used service guarantee, service blueprint, product testing trail, pay by instalment, offering additional services and customer satisfaction as his dimensions of logistics service innovation and related each of them to business growth. The study adopted the survey research design and quantitative research approach where data were collected from 44 logistics entrepreneurs in Thailand using a structured questionnaire. The data collected were analysed using percentage and frequency tables, mean and standard deviation. The findings showed that service blueprint, service guarantee and customer guarantee have a strong impact on business growth in the informal logistics industry.

Sipos and Bizoi (2015) critically analysed the effects of innovation on the logistics performance of firms. The researchers adopted the desktop research design and qualitative research approach where data were obtained from 22 European countries that are members of the European Union (EU). The data obtained from the 22 European Union (EU) are based on the EU statistics on the Summary Innovation Index (SII) and Logistics Performance Index (LPI) of European firms for the period 2012. The data collected were analysed statistically using graphs while the hypotheses were tested using linear regression analysis. The findings revealed that logistics performance moderately increases the total volume of freight transport, the volume of air transported goods; sea-transported goods as well as road transported goods. The study also revealed that the innovative performance of a country leads to superior logistics performance. The study equally revealed that the logistics performance of a country affects the motorisation rate to a moderate extent.

Cui et al (2012) critically analysed logistics innovation in China with a particular focus on the driving forces, barriers and effects of such innovation on third-party logistics firms. The researchers employed the case study design, positivist research philosophy and qualitative research approach. Their data were collected from third-party logistics firms in Taiwan, Hong Kong and Mainland China with the aid of an interview. The data collected via interview were coded and transcribed verbatim immediately. The findings revealed that customer requirements, environmental factors, increased efficiency and effectiveness, differentiation and provision of wider service portfolios are the driving forces behind logistics innovation in third-party firms in China. The study also revealed that cost, employee ability and time are the major barriers hindering third-party logistics firms from innovating in China. The study equally revealed that logistics innovation improves the operational performance of third-party firms in China by increasing service portfolios, operational efficiency and effectiveness, customer relationship, sales, organisational reputation and financial performance.

Oksana and Yevhen (2019) explored the innovative activity of logistics enterprises in the modern world. Their study employed the desktop research design and used secondary data to analyse the logistics performance of Ukraine companies for the period 2007-2018. The researchers utilised the World Bank rating data on the Logistics Performance Index (LPI) of different countries for the period under study. The data collected were analysed using graphs, charts and system analysis. The findings revealed that the innovative activity of logistics



enterprises in Ukraine is declining as the country is ranked in 66th position in the world out of 160 countries. The study revealed that Ukraine occupied the 73rd position in 2007, 102nd in 2010, 66th in 2012, 61st in 2014, 80th in 2016 and 66th in 2018. The decline in the logistics performance of Ukraine's logistics companies after 2014 is attributed to the worse economic and political situation of the country.

Gap in Literature

From the empirical literature reviewed, it was observed that a good number of studies have been conducted on logistics innovation in both developing and developed countries but none of these studies relate logistics innovation to organisational competitiveness of maritime companies in Nigeria. Even the methods employed by previous studies to investigate logistics innovation practices of firms are too insignificant to reckon with. This has created a vacuum in literature which this study intends to fill and contribute to the existing knowledge on logistics innovation practices of firms from the Nigerian perspective.

METHODOLOGY

The study utilised the positivist research philosophy and correlational research design. The population of the study comprised 51 maritime companies registered with the Nigerian Maritime Administration and Safety Agency (NIMASA) in South-West Nigeria (South-West Zonal Office, Department of Statistics, NIMASA, 2024). The maritime companies include both indigenous and multinational companies and they are spread across the six (6) states in the South-West Geopolitical Zone namely; Lagos State, Ogun State, Osun State, Ekiti State, Oyo State, and Ondo State. A sample size of 21 maritime companies was selected from the study population using a purposive sampling technique. The 21 maritime companies were selected based on the criteria that they have innovated their logistics operations including their transportation and warehousing operations. However, the sampling units were made up of managers of the selected maritime companies in South-West Nigeria. 105 managers were drawn from the 21 selected maritime companies on a ratio of 5 managers per company. Data were collected from the respondents using a structured questionnaire with a 4-point rating scale such as Strongly Agree, Agree, Disagree and Strongly Disagree. After validating the research instrument (questionnaire) and confirming its reliability using the Cronbach Alpha method, the questionnaire was administered to the respondents (managers) of the selected maritime companies in South-West Nigeria. One hundred and five (105) copies of the questionnaire were administered to the respondents and 93 copies were collected. Descriptive statistics were used to analyse the data collected from the respondents while the Spearman Rank Order Correlation Coefficient (ρ) was used to test the hypotheses. The SPSS 24.0 version was utilised for the bivariate analysis.



RESULTS AND DISCUSSION

The data collected on logistics innovations such as transportation and warehousing innovations were correlated with the data obtained on the measures of organisational competitiveness (customer satisfaction and customer patronage) using the SPSS software program version 24. The results of the bivariate analysis are presented in the tables below:

Table 1: Result of bivariate analysis between transportation innovation and customer satisfaction of maritime companies

			Transportation Innovation	Customer Satisfaction
Spearman Rank (rho)	Transportation Innovation	Correlation Coefficient	1.000	.644**
		Sig. (2 tailed)	.	.001
		N	93	93
	Customer Satisfaction	Correlation Coefficient	.644**	1.000
		Sig. (2 tailed)	.001	.
		N	93	93

**Correlation is significant at 0.01 levels (2 tailed)

*Correlation is significant at 0.05 levels (2 tailed)

Source: SPSS-Generated Output

Table 1 shows the result of the bivariate analysis between transportation innovation and customer satisfaction of maritime companies in South-West Nigeria. The result indicates that transportation innovation has a strong positive correlation with customer satisfaction ($\rho = .644^{**}$) and the symbol ** signifies that this correlation is significant at 0.01 level. Consequently, the null hypothesis (H_{01}) is rejected and the alternate hypothesis is accepted. This means that there is a significant relationship between transportation innovation and customer satisfaction of maritime companies in South-West Nigeria.

Table 2: Result of bivariate analysis between transportation innovation and customer patronage of maritime companies

			Transportation Innovation	Customer Patronage
Spearman Rank (rho)	Transportation Innovation	Correlation Coefficient	1.000	.668**
		Sig. (2 tailed)	.	.001
		N	93	93
	Customer Patronage	Correlation Coefficient	.668**	1.000
		Sig. (2 tailed)	.001	.
		N	93	93

**Correlation is significant at 0.01 levels (2 tailed)

*Correlation is significant at 0.05 levels (2 tailed)

Source: SPSS-Generated Output



Table 2 contains the result of the bivariate analysis carried out between transportation innovation and customer patronage of maritime companies in South-West Nigeria. The result shows a strong positive correlation between transportation innovation and customer patronage ($\rho = .668^{**}$) and this correlation is significant at 0.01 level as indicated by the symbol **. Therefore, the null hypothesis (H_{02}) is rejected and the alternate hypothesis is accepted. This means that we then accept that there is a significant relationship between transportation innovation and customer patronage of maritime companies in South-West Nigeria.

Table 3: Result of bivariate analysis between warehousing innovation and customer satisfaction of maritime companies

			Warehousing Innovation	Customer Satisfaction
Spearman Rank (rho)	Warehousing Innovation	Correlation Coefficient	1.000	.760**
		Sig. (2 tailed)	.	.001
		N	93	93
	Customer Satisfaction	Correlation Coefficient	.760**	1.000
		Sig. (2 tailed)	.001	.
		N	93	93

**Correlation is significant at 0.01 levels (2 tailed)

*Correlation is significant at 0.05 levels (2 tailed)

Source: SPSS-generated Output

Table 3 presents the result of the bivariate analysis carried out between warehousing innovation and customer satisfaction of maritime companies in South-West Nigeria. The result indicates that warehousing innovation is strongly and positively correlated to customer satisfaction ($\rho = .760^{**}$) and the symbol ** indicates that this correlation is significant at 0.01 level. Based on this result, the null hypothesis (H_{03}) is rejected and the alternate hypothesis is accepted. This means that we then accept that there is a significant relationship between warehousing innovation and customer satisfaction of maritime companies in South-West Nigeria.

Table 4: Result of bivariate analysis between warehousing innovation and customer patronage of maritime companies

			Warehousing Innovation	Customer Patronage
Spearman Rank (rho)	Warehousing Innovation	Correlation Coefficient	1.000	.623**
		Sig. (2 tailed)	.	.001
		N	93	93
	Customer Patronage	Correlation Coefficient	.623**	1.000
		Sig. (2 tailed)	.001	.
		N	93	93

**Correlation is significant at 0.01 levels (2 tailed)

*Correlation is significant at 0.05 levels (2 tailed)

Source: SPSS-Generated Output



Table 4 presents the result of the bivariate analysis carried out between warehousing innovation and customer patronage of maritime companies in South-West Nigeria. The result shows a strong positive correlation between warehousing innovation and customer patronage ($\rho = .623^{**}$) and this correlation is significant at 0.01 level as indicated by the symbol ** . Based on this result, the null hypothesis (H_{04}) is rejected and the alternate hypothesis is accepted. This implies that we then accept that there is a significant relationship between warehousing innovation and customer patronage of maritime companies in South-West Nigeria.

DISCUSSION OF FINDINGS

This study found a significant relationship between transportation innovation and customer satisfaction of maritime companies in South-West Nigeria. This finding was deduced from the result of the SPSS correlation analysis carried out on the two variables in the first hypothesis. The result revealed that transportation innovation has a strong positive correlation with customer satisfaction ($\rho = .644^{**}$) and this correlation is statistically significant at 0.01 level. Based on this result, the null hypothesis (H_{01}) was rejected and the alternate hypothesis was accepted. This means that we then accept that there is a significant relationship between transportation innovation and customer satisfaction of maritime companies in South-West Nigeria. This finding is supported by the research conducted by Grawe (2009) and Wang et al (2020) which reported that transportation innovation significantly increases customer satisfaction levels since it ensures safe and timely delivery of goods.

This study also discovered a significant relationship between transportation innovation and customer patronage of maritime companies in South-West Nigeria. This finding emerged from the result of the SPSS correlation analysis carried out on the two variables in the second hypothesis. The result showed a strong positive correlation between transportation innovation and customer patronage ($\rho = .668^{**}$) and this correlation is significant at 0.01 level as indicated by the symbol ** . Consequently, the null hypothesis (H_{02}) was rejected and the alternate hypothesis was accepted. This means that we then accepted that there is a significant relationship between transportation innovation and customer patronage of maritime companies in South-West Nigeria. This finding is supported by Beers (2014) who noted that transportation innovation significantly improves logistics service delivery and this attracts new customers to the firm. Erdogan and Miller-Hooks (2012) also agreed with this finding as they revealed that logistics companies that adopt new methods of providing transportation services are likely to increase their level of customer patronage.

This study equally discovered a significant relationship between warehousing innovation and customer satisfaction of maritime companies in South-West Nigeria. This finding was derived from the result of the SPSS correlation analysis carried out on the two variables in the third hypothesis. The result revealed that warehousing innovation is strongly and positively correlated to customer satisfaction ($\rho = .760^{**}$) and this correlation is significant at 0.01 level. Based on this result, the null hypothesis (H_{03}) was rejected and the alternate hypothesis was accepted. This means that we then accept that there is a significant relationship between warehousing innovation and customer satisfaction of maritime companies in South-West Nigeria. This finding is consistent with the research conducted by Gupta (2016) which reported that logistics companies that embrace warehousing innovation would increase the level of customer satisfaction by meeting customer demand and expectations. Wang et al (2020) also



agreed with this finding as they revealed that customers are highly satisfied with logistics companies that innovate and automate their warehousing operations.

Finally, it was revealed that warehousing innovation has a significant relationship with customer patronage of maritime companies in South-West Nigeria. This finding emanated from the result of the SPSS correlation analysis carried out on the two variables in the fourth hypothesis. The result showed a strong positive correlation between warehousing innovation and customer patronage ($\rho = .623^{**}$) and this correlation is significant at 0.01 level. Based on this result, the null hypothesis (H_{04}) was rejected and the alternate hypothesis was accepted. This implies that we then accepted that there is a significant relationship between warehousing innovation and customer patronage of maritime companies in South-West Nigeria. This finding is supported by Asian (2019) who noted that warehouse innovation makes it possible for companies to easily attract new customers and increases their level of customer patronage. Gadde and Hulthen (2010) also reported that a logistics firm would experience an increased level of customer patronage if they adopt new methods of managing their warehousing operations.

CONCLUSIONS

Considering the increasing level of competition in the logistics industry and its implications on firm survival, it becomes imperative for maritime companies to embrace logistics innovation. This can be done by reviewing their transportation and warehousing operations to integrate some element of newness in the way in which these logistics functions are carried out. The empirical results of this study have clearly shown that transportation innovation and warehousing innovation have a positive and significant relationship with organisational competitiveness in terms of increasing customer satisfaction and patronage. The implication of this finding is that if maritime companies adopt logistics innovation such as transportation and warehousing innovation, it would increase the level of customer satisfaction with their services as well as the level of customer patronage, and hence improve their organisational competitiveness.

RECOMMENDATIONS

Based on the findings and conclusion, the following recommendations are provided:

1. Maritime companies in Nigeria especially those that are struggling in the industry should adopt logistics innovation such as transportation and warehousing innovation as it would improve their organisational competitiveness.
2. Considering the removal of fuel subsidies in Nigeria and its resultant hike in the price of petrol products, indigenous maritime companies in the country should switch from fuel-dependent vessels to newly invented hybrid electric vessels that use electric engines and conventional internal combustion engines as it would reduce their transportation costs, eliminate carbon emission during transit and improve their service delivery performance.
3. Maritime companies in Nigeria should adopt a new transportation system by converting their fuel-dependent vessel into combusted natural gas engines as this would enable them



to avoid the high cost of fuel in Nigeria and transport their cargo in a cost-effective manner.

4. Maritime companies in Nigeria should take advantage of modern technology by using new technologies such as collaborative mobile robots, electronic data interchange (EDI), warehouse management systems (WMS), radio frequency identification (RFID), drones, blockchain applications, wearable technology and digital twin technology to run their warehousing operations as this would not only reduce their warehousing cost but also increase customer satisfaction and improve their organisational competitiveness.
5. Finally, it is recommended that maritime companies in Nigeria innovate their warehousing operations by constructing a warehouse that is powered by electricity, solar energy and compressed natural gas instead of their existing fuel-powered warehouse as it would not only enable them to manage their warehousing operations in a cost-effective and environmentally friendly manner but would also improve their organisational competitiveness.

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